

IMPROVED METHOD FOR PHASE SHIFT MASK DESIGN, FABRICATION, AND USE

ABSTRACT OF THE DISCLOSURE

A system and method of strong phase-shifting a beam from an actinic light source in a lithographic process includes focusing a beam from the electromagnetic beam source onto a mask adapted to selectively phase-shift at least a portion of the beam according to a predetermined pattern. The beam is passed from the actinic light source through the mask producing a phase-shifted beam, and the phase-shifted beam is directed at a substrate such as a semiconductor wafer adapted to be selectively etched according to the predetermined pattern. The strong phase-shift serves to substantially eliminate zero-order light in the phase-shifted beam. Strong phase-shift mask techniques, through a two electromagnetic beam interference imaging process, are known in the art of microlithography to form imaging results for features of a size well below the limit of conventional prior art imaging.

